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First Named Inventor: Robert M. Duboc Jr. Filing Date: May 7, 1999
Group Art Unit: 2675 Examiner: Anyaso, U.
Atty. Docket No.: CT-M117 US
Title: DISPLAY WITH ACTIVE CONTRAST ENHANCEMENT
Assignee: Candescent Technologies Corporation and
Candescent Intellectual Property Services, Inc.

San Jose, California
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RESPONSE TO OFFICE ACTION

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Sir:

This is in response to the Office Action mailed 22 August 2002 for the above patent application.

In a 16 October 2002 request, Applicants' attorney requested clarification of the 22 August 2002 Office Action. Unfortunately, despite discussion with the Examiner, the 22 August 2002 Office Action is still unclear to Applicants' attorney. For the Examiner's convenience, repeated below are the comments presented in the 16 October 2002 request as to why the 22 August 2002 Office Action is unclear:

The 22 August 2002 Office Action indicates that Claims 1 - 4, 6 - 40, 42, 44, 46, 47, 49 - 52, 54 - 59, 66 - 105, 107 - 145 and 155 - 161 are pending. However, this group of pending claims differs from the claims that should be pending as a result of the 29/30 May 2002 telephonic interview that Applicants' attorney had with the Examiner and the Examiner's supervisor, Steve Saras.

Claims 155 - 161 were added, and Claims 106 and 146 - 154 were canceled, in the 27 March 2002 After-final Amendment which, per the 29/30 May 2002 interview, was not (to be) entered. Instead, the 27 March 2002 Amendment was to be replaced with the 30 May 2002 After-final Amendment in which no claims were added or canceled. Accordingly, the 22 August 2002 Office Action should (a) provide that

Claims 1 - 4, 6 - 40, 42, 44, 46, 47, 49 - 52, 54 - 59, and 66 - 154 are pending and (b) not refer to any claims numbered 155 - 161.

In support of Applicants' attorney's belief that the status of the claims should be as indicated above, enclosed is a copy [copy not enclosed with this Amendment] of (a) a note made by Applicants' attorney in connection with the 29 May 2002 portion of the interview and (b) a note made by Applicants' attorney in connection with the 30 May 2002 portion of the interview. Also, the second sentence of the first paragraph on page 3 of the 30 May 2002 amendment [footnote superscript and footnote deleted] states that "In submitting this amendment, Applicants' attorney notes that the 37 CFR 1.116 Amendment submitted 27 March 2002 for this application has not [emphasis added] been entered".

In short, the 22 August 2002 Office Action should be corrected to indicate that Claims 1 - 4, 6 - 40, 42, 44, 46, 47, 49 - 52, 54 - 59, and 66 - 154 are pending. Inasmuch as the 27 March 2002 amendment was not entered, the revisions made in the 27 March 2002 amendment to the claims should be treated as not having occurred. This includes the changes to Claims 66, 98, 104, 107, and 129, the cancellation of Claim 106, and the addition of Claims 155 - 161. Although the revisions requested to Claims 98 and 104 in the 27 March 2002 amendment are the same as those made in the 30 May 2002 amendment, only the revisions made to Claims 98 and 104 in the 30 May 2002 amendment should be entered.

In responding to the 22 August 2002 Office Action, Applicants' attorney assumes here that the 22 August 2002 Office Action is corrected in the preceding manner. That is, Applicants' attorney assumes that the 30 May 2002 amendment has been entered and that the 27 March 2002 amendment has not been entered. Hence, Applicants' attorney assumes that the pending claims consist of Nos. 1 - 4, 6 - 40, 42, 44, 46, 47, 49 - 52, 54 - 59, and 66 - 154, that Claims 98 and 104 have been revised as prescribed in the 30 May 2002 amendment, that Claim 66, 107, and 129 have not been amended as prescribed in the unentered 27 March 2002 amendment, and that Claims 155 - 161 have not been entered¹.

Claim 98 has been objected to under 37 CFR 1.75(c) as "failing to further limit the subject matter of a previous claim". This objection is respectfully traversed.

The Examiner says that "Applicant amended claim 98 to have dependency to claim 97 rather than claim 96" and that "Applicant is required to cancel the claim(s), or amend the

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¹ If, for some reason, the Examiner decides to enter (or has entered and decides not to cancel the entry of) the 27 March 2002 amendment, independent Claim 66 would include the further limitations of dependent Claims 95 and 106 of which only Claim 106 was canceled in the 27 March 2002 amendment. Consequently, Claim 95 should also be canceled. In addition, Claim 96 which now depends from Claim 95 should be amended to depend from Claim 66.

claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form".

In the 4 May 2000 amendment, the dependency of Claim 98 was changed from Claim 96 to Claim 97. As revised in the 30 May 2002 amendment, Claim 98 recites that "the host liquid crystal comprises cholesteric liquid crystal" and that "the guest pleochroic dye comprises black dichroic dye". Claim 97, as revised in the 9 October 2001 amendment, recites that "the liquid-crystal material comprises: host liquid crystal; and guest pleochroic dye having selectively presentable largely black and largely transparent appearance conditions". The terms "host liquid crystal" and "guest pleochroic dye" in Claim 98 thus have antecedent basis in Claim 97.

Claim 96 (unamended) recites that "the liquid-crystal structure contains liquid-crystal material capable of being controlled to selectively transmit an image defined by unpolarized light incident on the liquid-crystal material". The terms "host liquid crystal" and "guest pleochroic dye" do not appear in Claim 96. Nor does either of these terms appear in any claim from which Claim 96 depends (directly or indirectly). Hence, Claim 98 needs to depend from Claim 97 in order to have proper antecedent basis for "host liquid crystal" and "guest pleochroic dye" in Claim 98. Accordingly, the 37 CFR 1.75(c) objection should be withdrawn.

Claims 66 - 81, 84 - 87, 93 - 97, 124, 129, and 130 have been rejected under 35 USC 103(a) as obvious based on Jones et al ("Jones"), U.S. Patent 5,175,637, in view of Hunt, U.S. Patent 4,231,068. This rejection is respectfully traversed.

Hunt discloses a deflected-beam raster-scan cathode-ray tube ("CRT") display in which the display's face is covered with a group of strips that switch between light-transmissive and light-absorptive states. A raster is situated behind the display's face. The strips on the display's face are oriented perpendicular to the direction in which the raster beam moves from line to line.

Voltage signals are applied to the strips in Hunt's display to cause the strips to switch between their light-transmissive and light-absorptive states in such a way that the strip situated directly in front of the raster beam is light transmissive while strips remote from the strip situated directly in front of the raster beam are light absorptive. Light emitted from

behind the light-transmissive strip passes through that strip and can be seen by a viewer situated in front of the display. At the same time, the strips in the light-absorptive states absorb light that impinges on those strips from outside the display. As a result, the display's contrast is enhanced. The voltage signals which control the switching of the strips can be provided at different voltage levels or at different frequencies to implement the switching function.

Independent Claim 66, as it exists in the absence of entry of the 23 March 2002 amendment, recites:

66. A display comprising:

an image-producing component having a multiplicity of imaging lines for producing an image, each imaging line being regularly updated to provide light that produces part of the image;

a set of shutter strips, each (a) associated with at least one of the imaging lines, (b) situated in front of each so-associated imaging line outside the image-producing component, and (c) being switched during operation of the display between a light-transmissive state and a light-absorptive state; and

a control component that utilizes light in causing the shutter strips to be selectively placed in their light-transmissive and light-absorptive states.

The display of Claim 66 thus includes a control component that utilizes light to cause shutter strips to be selectively placed in light-transmissive and light-absorptive states.

After acknowledging that Jones lacks such a control component, the Examiner alleges that "Hunt teaches an electro-optically controlled element that utilizes light in causing the shutter strips to be placed in their light-transmissive and light-absorptive states by teaching an optical screen that has a series of parallel strips, each strip including an electro-optical substance such that the strip can be made absorbent or transparent as required by varying voltage applied to the strip (column 1, lines 35-39)". The Examiner then alleges that "it would have been obvious to a person of ordinary skill in the art to combine *Jones et al* and *Hunt* in order to design a display which comprises a control component that utilizes light in causing the shutter strips to be selectively placed in their light-transmissive and light-absorptive states".

The Examiner's allegation that "Hunt teaches an electro-optically controlled element that utilizes light in causing the shutter strips to be placed in their light-transmissive and light-

absorptive states" is incorrect. The Examiner appears to be mixing up (a) what happens when the strips in Hunt's display are in their light-transmissive states and (b) how those strips are controlled.

Light passes through the strips in Hunt's display when they are light transmissive. However, Hunt does not utilize light to cause the strips to be selectively placed in their light-transmissive and light-absorptive states. Instead, Hunt applies suitable voltage signals to the strips to cause them to be selectively placed in their light-transmissive and light-absorptive states. Voltage signals are not light. Contrary to what Claim 66 requires, Hunt does not teach a control component that utilizes light to cause shutter strips to be selectively placed in light-transmissive and light-absorptive states.

As noted above, Jones does not teach a control component that utilizes light to cause shutter strips to be selectively placed in light-transmissive and light-absorptive states. Even if there was some motivation or suggestion for combining Jones and Hunt in the manner proposed by the Examiner, the combination would not teach the full subject matter of Claim 66. Accordingly, Claim 66 is patentable over Jones and Hunt.

Claims 67 - 81, 84 - 87, 93 - 97, and 124 all depend (directly or indirectly) from Claim 66. These twenty-five dependent claims are thus patentable over Jones and Hunt for the same reasons as Claim 66.

In addition, neither Jones nor Hunt discloses the further limitation of any of dependent Claims 71 - 74, 79 - 81, 84, 85, and 87. A separate basis is thereby provided for allowing Claims 71 - 74, 79 - 81, 84, 85, and 87 over Jones and Hunt. The same applies to Claim 86 since it depends from 85.

Independent Claim 129, as it exists in the absence of entry of the 23 March 2002 amendment, recites:

129. A method comprising the steps of:

producing an image by regularly updating each of a multiplicity of imaging lines of an image-producing component to provide light that produces part of the image;

switching each of a set of shutter strips, each associated with at least one of the imaging lines and being situated in front of each so-associated imaging line outside the

image-producing component, between a light-transmissive state and a light-absorptive state; and

utilizing light to cause the shutter strips to be selectably placed in their light-transmissive and light-absorptive states.

Similar to Claim 66, Claim 129 requires that light be utilized to cause shutter strips to be selectably² placed in light-transmissive and light-absorptive states.

For the reasons presented above in connection with Claim 66, neither Jones nor Hunt teaches the utilization of light to cause shutter strips to be selectably placed in light-transmissive and light-absorptive states. The combination of Jones and Hunt would not teach the full subject matter of Claim 129 even if there were some incentive or suggestion for combining Jones and Hunt in the manner proposed by the Examiner. Accordingly, Claim 129 is patentable over Jones and Hunt.

Claim 130 depends from Claim 129 and is therefore patentable over Jones and Hunt for the same reasons as Claim 129.

Claims 82, 83, and 88 - 92 have been rejected under 35 USC 103(a) as obvious based on Jones in view of Hunt and Nakamoto, U.S. Patent 6,031,328. This rejection is respectfully traversed.

Nakamoto discloses a flat-panel display consisting basically of (a) a flat-panel CRT component divided into an array of pixels and (b) a liquid-crystal component divided into a corresponding array of pixels respectively overlying the CRT pixels. The CRT component serves as a backlight source for the liquid-crystal component. Voltage signals are applied to each liquid-crystal pixel to cause it to switch between light-transmissive and light-absorptive states. The light emitted by a CRT pixel passes through the overlying liquid-crystal pixel when that liquid-crystal pixel is in its light-transmissive state. Little to no light passes through a liquid-crystal pixel when it is in its light-absorptive state.

Claims 82, 83, and 88 - 92 all depend (directly or indirectly) from Claim 66. Each of dependent Claims 82, 83, and 88 - 92 thus requires that the claimed display include a control

² Claim 66 uses "selectively" as an adverb for "placed" whereas Claim 129 uses "selectably" as an adverb for "placed". The adverbs "selectively" and "selectably" at these occurrences in Claims 66 and 129 are intended to have the same meaning.

component that utilizes light to cause shutter strips to be selectively placed in light-transmissive and light-absorptive states.

Nakamoto does not teach a control component that utilizes light to cause shutter strips to be selectively placed in light-transmissive and light-absorptive states. Nor, as mentioned above, do Jones and Hunt teach such a control component. Even if there was some suggestion or motivation for combining Jones, Hunt, and Nakamoto in the manner proposed by the Examiner, the combination would not teach the full subject matter of any of Claims 82, 83, and 88 - 92. Hence, Claims 82, 83 and 88 - 92 are patentable over Jones, Hunt, and Nakamoto.

None of Jones, Hunt, and Nakamoto discloses the further limitation of any of dependent Claims 82, 88, and 90 - 92. Separate bases are thereby furnished for allowing Claims 82, 88, and 90 - 92 over Jones, Hunt, and Nakamoto. The same applies to Claims 83 and 89 since they depend respectively from Claims 82 and 88

Claims 115 - 123 have been rejected under 35 USC 103(a) as obvious based on Jones in view of Hunt and Curtin et al ("Curtin 790"), U.S. Patent 5,686,790. This rejection is respectively traversed.

Curtin 790 deals primarily (almost exclusively) with flat-panel CRT displays but mentions various other types of displays such as liquid-crystal displays, plasma displays, and electroluminescent displays. As indicated by the Examiner, Curtin 790 teaches a display that includes a faceplate and a backplate that extend parallel to each other in an active display region.

Claims 115 - 123 all depend (directly or indirectly) from Claim 66. Accordingly, each of Claims 115 - 123 requires that the claimed display include a control component which utilizes light to cause shutter strips to be selectively placed in light-transmissive and light-absorptive states.

Curtin 790 does not teach a control component that utilizes light to cause shutter strips to be selectively placed in light-transmissive and light-absorptive states. Since neither Jones nor Hunt teaches such a control component, the combination of Jones, Hunt, and Curtin 790 would not teach the full subject matter of any of Claims 115 - 123 even if there was some incentive or suggestion for combining Jones, Hunt, and Curtin 790 in the manner proposed by

the Examiner. Consequently, Claims 115 - 123 are patentable over Jones, Hunt, and Curtin 790.

As far as Applicants' attorney is aware, Curtin 790 does not teach the further limitation of any of dependent Claims 120 - 122. Nor do Jones and Hunt appear to teach the further limitation of any of these three claims. Hence, Claims 120 - 122 are separately allowable over Jones, Hunt, and Curtin 790.

Claim 98 has been rejected under 35 USC 103(a) as obvious based on Jones in view of Hunt and Waters et al ("Waters"), U.S. Patent 4,596,446. This rejection is respectfully traversed.

Waters teaches liquid-crystal devices that utilize cholesteric liquid crystal containing pleochroic dye.

Claim 98 depends (indirectly) from Claim 66. Accordingly, Claim 98 requires that the claimed display include a control component that utilizes light in causing shutter strips to be selectively placed in light-transmissive and light-absorptive states. Waters does not teach such a control component. Inasmuch as Jones and Hunt do not teach such a control component, the combination of Jones, Hunt, and Waters would not teach the full subject matter of Claim 98 even if there was some suggestion or motivation for combining Jones, Hunt, and Waters in the manner proposed by the Examiner. Claim 98 is therefore patentable over Jones, Hunt, and Waters.

The allowance of Claims 1 - 4, 6 - 40, 42, 44, 46, 47, 49 - 52, 54 - 59, 125 - 128, and 131 - 145 is noted.

Claims 99 - 105 and 107 - 114 have been indicated as being allowable if rewritten in independent form. Each of these fifteen claims depends (directly or indirectly) from Claim 66. Since Claim 66 is allowable in its present form, dependent Claims 99 - 105 and 107 - 114 are likewise allowable in their present form.

The 22 August 2002 Office Action does not deal with any of Claims 106 and 146 - 154 on the merits. As indicated above, Applicants' attorney considers Claims 106 and 146 - 154 to be pending.

Claim 106 depends from Claim 66 by way of Claim 95. Since Claim 66 is patentable over Jones and Hunt, Claim 106 is patentable over Jones and Hunt. Claim 106 is also patentable over Jones, Hunt, and any one or more of Nakamoto, Curtin 790, and Waters.

Independent Claim 146 recites:

146. A display comprising:
an image-producing flat-panel component having a multiplicity of imaging lines for producing an image, each imaging line being regularly updated to provide light that produces part of the image, the imaging lines being selectively activated in response to a multiplicity of selection signals;
a set of shutter strips, each (a) associated with at least one of the imaging lines, (b) situated in front of each so-associated imaging line outside the image-producing component, and (c) being switched during operation of the display between a light-transmissive state and a light-absorptive state such that each shutter strip is in its light-transmissive state at least partly while each imaging line associated with that strip is providing light for creating the image, the shutter strips switching between their light-transmissive and light-absorptive states largely in response to the selection signals or/and at least one selection generation signal utilized in generating the selection signals; and
a control component for selectively placing the shutter strips in their light-transmissive and light-absorptive states in response to the selection signals or/and each selection generation signal, the control component comprising a group of control elements for selectively providing light that determines placement of the shutter strips in their light-transmissive and light-absorptive states.

Similar to Claim 66, Claim 146 requires a control component that selectively provides light that determines the placement of shutter strips in light-transmissive and light-absorptive states.

None of Jones, Hunt, Nakamoto, Curtin 790, and Waters teaches a control component that provides light which determines the placement of shutter strips in light-transmissive and light-absorptive states. The combination of Jones and Hunt would not teach the full subject matter of Claim 146 even if there were some incentive or suggestion for combining Jones and Hunt. The same applies to adding any one or more of Nakamoto, Curtin 790, and Waters to the combination. Accordingly, Claim 146 is patentable over Jones, Hunt, Nakamoto, Curtin 790, and Waters, separately or in any combination.

Claims 147 - 149 all depend from Claim 146 and thus are patentable over Jones, Hunt, Nakamoto, Curtin 790, and Waters, separately or in any combination, for the same reasons as Claim 146.

None of Jones, Hunt, Nakamoto, Curtin 790, and Waters discloses the further limitation of dependent Claim 147 or 148. These two claims thus are separately allowable over Jones, Hunt, Nakamoto, Curtin 790, and Waters, again separately or in any combination.

Independent Claim 150 recites:

150. A composite display comprising:

a generally flat image-producing component having a multiplicity of imaging lines for producing an image, each imaging line being regularly updated to provide light that produces part of the image, the image-producing component comprising one of (a) a light-emitting diode display, (b) a combination of a liquid-crystal device and a phosphor-based light-emitting device which selectively emits light when excited by light provided by the liquid-crystal device, and (c) a combination of a light-providing portion, an electron-emitting portion which emits electrons upon being excited by light furnished by the light-providing portion, and a phosphor-based light-emitting device which selectively emits light when struck by electrons emitted by the electron-emitting portion; and

a set of shutter strips, each (a) associated with at least one of the imaging lines, (b) situated in front of each so-associated imaging line outside the image-producing component, and (c) being switched during operation of the display between a light-transmissive state and a light-absorptive state such that each shutter strip is in its light-transmissive state at least partly while each imaging line associated with that strip is providing light for creating the image.

Claim 150 requires that a set of switchable shutter strips be situated in front of a flat image-producing component that contains "one of (a) a light-emitting diode display, (b) a combination of a liquid-crystal device and a phosphor-based light-emitting device which selectively emits light when excited by light provided by the liquid-crystal device, and (c) a combination of a light-providing portion, an electron-emitting portion which emits electrons upon being excited by light furnished by the light-providing portion, and a phosphor-based light-emitting device which selectively emits light when struck by electrons emitted by the electron-emitting portion". None of Jones, Hunt, Nakamoto, Curtin 790, and Waters discloses such a shutter-strip-containing structure. Nor would anything in Jones, Hunt, Nakamoto, Curtin 790, and Waters lead a person skilled in the art to the structure of Claim 150. Consequently, Claim 150 is patentable over Jones, Hunt, Nakamoto, Curtin 790 and Waters, separately or in any combination.

Claims 151 - 154 all depend from Claim 150 and thus are patentable over Jones, Hunt, Nakamoto, Curtin 790, and Waters, separately or in any combination, for the same reasons as Claim 150.

None of Jones, Hunt, Nakamoto, Curtin 790, and Waters discloses the further limitation of dependent Claim 152 or 153. Hence, Claims 152 and 153 are separably allowable over Jones, Hunt, Nakamoto, Curtin 790, and Waters, again separately or in any combination.

In short, the 37 CFR 1.75(c) objection to Claim 98 has been shown to be inappropriate. Claim 66 - 98, 115 - 124, 129, and 130 have been shown to be allowable over the applied art. Claims 106 and 146 - 154, which should be deemed to be pending in the present application rather than Claims 155 - 161, have likewise been shown to be allowable over the applied art. Claims 99 - 105 and 107 - 114 are allowable in their present form. The same applies to Claim 106. Accordingly, Claims 66 - 124, 129, 130, and 146 - 154 should be allowed with already allowed Claims 1 - 4, 6 - 40, 42, 44, 46, 47, 49 - 52, 54 - 59, 125 - 128, and 131 - 145 so that the application may proceed to issue.

Please telephone Applicants' attorney at 408-453-9200, ext. 1371, if there are any questions.

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